On the Prediction of Popularity of Trends and Hits for User Generated Videos

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ABSTRACT

User generated content (UGC) has emerged as the predominant form of media publishing on the Web 2.0. Motivated by the large adoption of video sharing on the Web 2.0, the objective of our work is to understand and predict popularity trends (e.g, will a video be viral?) and hits (e.g, how may views will a video receive?) of user generated videos. Such knowledge is paramount to the effective design of various services including content distribution and advertising. Thus, in this paper we formalize the problem of predicting trends and hits in user generated videos. Also, we describe our research methodology on approaching this problem. To the best of knowledge, our work is novel in focusing on the problem of predicting popularity trends complementary to hits. Moreover, we intend on evaluating efficacy of our results not only based on common statistical error metrics, but also on the possible online advertising revenues our predictions can generate. After describing our proposal, we here summarize our latest findings regarding (1) uncovering common popularity trends; (2) measuring associations between UGC features and popularity trends; and (3) assessing the effectiveness of models for predicting popularity trends.

Categories and Subject Descriptors

C.4 [**Computer Systems Organization**]: Performance of Systems—*Measurement techniques*; H.3.5 [**Information Storage and Retrieval**]: Online Information Services—*Web-based services*

Keywords

UGC; video; popularity; trends

General Terms

Human Factors; Design; Measurement

1. INTRODUCTION

On the Web 2.0, user generated content (UGC) has become the de-facto form of media publishing on some of the most popular Internet applications nowadays [6]. Focusing on video content, websites such as YouTube [1] receive over 800 million unique users monthly, attracting over 1 million different advertisers [23]. Even niche applications, such as Vimeo [2], which focuses on independent filmmakers, manage to attract over 70 million unique users monthly [19].

Given the success of such applications and the current large volume of videos consumed daily, understanding how users find such content and how content popularity evolves provide valuable insights for content generators, online advertisers and Internet service providers (ISPs), amongst others. For instance, from a systems perspective, understanding these properties may drive the design of better analytic tools, a major market segment nowadays. Online advertisers may also benefit from this information to better place contextual advertisements, while ISPs could exploit it to develop more cost-effective content delivery platforms and caching systems. From a social perspective, understanding the properties of video popularity trends could be used to better comprehend the human dynamics of consumption processes [7]. Also, content producers could use insights on how user collaboration and collaborative social activities on Web 2.0 applications may impact content popularity, providing information on aspects related to their own fame on video sharing applications.

Most previous efforts, which are focused on predicting the popularity of a piece of content measured at a specific future date [16–18, 22], are still preliminary, as they provide limited knowledge on which features and system mechanisms (e.g., search, related videos, etc) contribute the most to popularity growth. Analyzing the importance of such features to popularity growth is key to provide scalable alternatives to service design, as solutions based on content analysis are less scalable in (user generated) videos. Moreover, there is little effort towards predicting popularity evolution (or trends), which may also provide valuable knowledge. For instance, online advertisers and content delivery systems could benefit more from predicting not only a final popularity measure for UGC, but also whether its popularity trend is increasing and how stable it is likely to be over time.

In sum, our proposed research aims at understanding the importance and utility of various features, particularly referrers (i.e, incoming links to videos), on the popularity evolution of individual user generated videos and exploiting them to develop methods to predict future popularity measures and trends of those videos.

The rest of this paper is organized as follows. Section 2 describes our problem statement and research goals. We describe our current methodology on addressing our goals on Section 3. The current state of our research is described in Section 4 while our related work is addressed in Section 5. Section 6 concludes this paper.

[1] `http://youtube.com`
[2] `http://vimeo.com`

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